

Claims

1. A reservation changing system for changing a reservation for purchasing a ticket for transport that provides a transportation service, the reservation changing system comprising a mobile terminal apparatus, an information provision server apparatus, and a reservation server apparatus, wherein

the mobile terminal apparatus includes a secure unit, stores, in the secure unit, first reservation information indicating the reservation and including a boarding location where the transport is to be boarded and a departure time of the transport, obtains a present location of the mobile terminal apparatus, extracts the boarding location from the first reservation information, and transmits the obtained present location and the extracted boarding location to the information provision server apparatus,

the information provision server apparatus receives the present location and the boarding location, obtains, with use of the received present location and boarding location, an expected arrival time of a user at the boarding location or an approximate time for the user to arrive at the boarding location, and transmits the obtained expected arrival time or approximate time to the mobile terminal apparatus,

the mobile terminal apparatus, in the secure unit, receives the expected arrival time, or receives the approximate time and calculates an expected arrival time, and, when a time margin between the expected arrival time and the departure time included in the first reservation information is insufficient, transmits, to the reservation server apparatus, second reservation information

indicating a reservation for a ticket for a transport that departs later than the departure time, and stores the second reservation information in place of the first reservation information, and

the reservation server apparatus receives the second
5 reservation information, and stores the received second reservation information in place of the first reservation information.

2. The reservation changing system of Claim 1, wherein

the mobile terminal apparatus determines that the time margin
10 is insufficient when a margin-added expected arrival time is later than the departure time, the margin-added expected arrival time having been obtained by adding a margin value to the expected arrival time.

3. The reservation changing system of Claim 2, wherein

15 the secure unit of the mobile communication terminal is a portable IC card.

4. The reservation changing system of Claim 2, wherein

the secure unit of the mobile terminal apparatus performs
20 communication with the information provision server apparatus and with the reservation server apparatus via a first communication interface, and

the secure unit of the mobile terminal apparatus further performs, with an external apparatus via a second communication
25 interface, a procedure for boarding transport, with use of the stored second reservation information.

5. The reservation changing system of Claim 4, wherein

the external apparatus is a ticket issuing apparatus that issues tickets for transport,

the secure unit of the mobile terminal apparatus outputs the stored second reservation information to the ticket issuing apparatus,

5 and

the ticket issuing apparatus receives the second reservation information, and issues a ticket for the transport for which the reservation has been made according to the received second reservation information.

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6. The reservation changing system of Claim 4, wherein

the external apparatus is a ticket inspection apparatus that inspects tickets at an entry point for boarding transport,

15 the secure area of the mobile terminal apparatus outputs the stored second reservation information to the ticket inspection apparatus, and

the ticket inspection apparatus receives the second reservation information, inspects content of the received second reservation information, and controls opening and closing of a gate 20 of the ticket inspection apparatus according to a result of the inspection.

7. A portable IC card, comprising:

a storage unit operable to store first reservation information, 25 the first reservation information indicating a reservation for purchase of a ticket for a transport and including a boarding location where the transport is to be boarded and a departure time of the transport;

an obtaining unit operable to obtain an expected arrival time of a user at the boarding location;

a margin judgment unit operable to judge whether or not a time margin between the obtained expected arrival time and the departure time included in the first reservation information is sufficient; and

5 a changing unit operable to, when the time margin is judged not to be sufficient, store second reservation information in place of the first reservation information, the second reservation 10 information indicating a reservation for a ticket for a transport that departs later than the departure time.

8. The IC card of Claim 7, wherein

the margin judgment unit determines that the time margin is 15 insufficient when a margin-added expected arrival time is later than the departure time, the margin-added arrival time having been obtained by adding a margin value to the expected arrival time.

9. The IC card of Claim 8, wherein

20 the IC card is mounted in a mobile terminal apparatus, the mobile terminal apparatus being connected to an information provision server apparatus and a reservation server apparatus via a network,

the obtaining unit instructs the mobile terminal apparatus to obtain a present location of the mobile terminal apparatus,

25 the mobile terminal apparatus obtains the present location, extracts the boarding location from the first reservation information stored in the mounted IC card, and transmits the obtained present location and the extracted boarding location to the information

provision server apparatus,

the information provision server apparatus receives the present location and the boarding location, calculates the expected arrival time at the boarding location or an approximate time for the user to arrive at the boarding location, with use of the received present location and boarding location, and transmits the calculated expected arrival time or approximate time to the mobile terminal apparatus,

the mobile terminal apparatus receives the expected arrival time, or receives the approximate time and calculates an expected arrival time, and outputs the received expected arrival time to the IC card,

the obtaining unit receives the expected arrival time, and the changing unit overwrites the stored first reservation information with the second reservation information, and further transmits the second reservation information to the reservation server apparatus via the mobile terminal apparatus.

10. The IC card of Claim 9, further comprising:

20 a present information obtaining unit operable to obtain a time difference between the departure time and a present time, and obtain a distance between the obtained present location and the boarding location; and

25 a difference judgment unit operable to judge, according to the obtained time difference and the obtained distance, whether or not the margin judgment unit is to perform judgment,

wherein when the difference judgment unit judges that the margin judgment unit is not to perform the judgment, the margin judgment

unit suppresses judgment, and the changing unit suppresses overwriting.

11. The IC card of Claim 8, further comprising:

5 a boarding procedure unit operable to perform, with an external apparatus, a procedure for boarding transport, with use of the stored second reservation information.

12. The IC card of Claim 11, wherein

10 the external apparatus is a ticket issuing apparatus that issues tickets for transport,

 the boarding procedure unit outputs the stored second reservation information to the ticket issuing apparatus, and

15 the ticket issuing apparatus receives the second reservation information, and issues a ticket for the transport for which a reservation has been made according to the received second reservation information.

13. The IC card of Claim 11, wherein

20 the external apparatus is a ticket inspection apparatus that inspects tickets at an entry point for boarding a transport,

 the boarding procedure unit outputs the stored second information to the ticket inspection apparatus, and

25 the ticket inspection apparatus receives the second reservation information, inspects content of the received second reservation information, and controls opening and closing of a gate of the ticket inspection apparatus according to a result of the inspection.

14. A mobile terminal apparatus for changing a reservation for purchase of a ticket for a transport that provides a transportation service, comprising a secure unit, the secure unit including:

5 a storage unit operable to store first reservation information, the first reservation information indicating the reservation and including a boarding location where the transport is to be boarded and a departure time of the transport;

10 an obtaining unit operable to obtain a present location of the mobile terminal apparatus, extract the boarding location from the first reservation information, and obtain an expected arrival time of a user at the boarding location, with use of the obtained present location and the extracted boarding location;

15 a margin judgment unit operable to judge whether or not a time margin between the obtained expected arrival time and the departure time included in the first reservation information is sufficient; and

20 a changing unit operable to, when the time margin is judged not to be sufficient, transmit second reservation information to the reservation server apparatus, the second reservation information indicating a reservation for a ticket for a transport that departs later than the departure time, and store the second reservation information in place of the first reservation information.

25 15. The mobile terminal apparatus of Claim 14, wherein

 the margin judgment unit determines that the time margin is insufficient when a margin-added expected arrival time is later than the departure time, the margin-added arrival time having been obtained

by adding a margin value to the expected arrival time.

16. The mobile terminal apparatus of Claim 15, wherein
the obtaining unit obtains the present location by calculating
- 5 the present location based on range finding signals received from
a plurality of GPS satellites.

17. The mobile terminal apparatus of Claim 15, wherein
the secure unit is a portable IC card.

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18. The mobile terminal apparatus of Claim 15, wherein
the secure unit further performs, with an external apparatus,
a procedure for boarding transport, using the second reservation
information.

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19. The mobile terminal apparatus of Claim 18, wherein
the external apparatus is a ticket issuing apparatus that issues
tickets for transport,
the secure unit of the mobile terminal apparatus outputs the
20 stored second reservation information to the ticket issuing apparatus,
and
the ticket issuing apparatus receives the second reservation
information, and issues a ticket for the transport for which a
reservation has been made according to the received second reservation
25 information.

20. The mobile terminal of Claim 18, wherein
the external apparatus is a ticket inspection apparatus that

inspects tickets at an entry point for boarding a transport,

the secure unit of the mobile telephone apparatus outputs the stored second information to the ticket inspection apparatus, and

the ticket inspection apparatus receives the second

5 reservation information, inspects content of the received second reservation information, and controls opening and closing of a gate of the ticket inspection apparatus according to a result of the inspection.

10 21. The mobile terminal apparatus of Claim 15, being connected to an information provider server via a network,

wherein the obtaining unit transmits the obtained present location and the extracted boarding location to the information provision server, receives the expected arrival time from the 15 information provision server, or receives an approximate time for the user to arrive at the boarding location from the information provision server and calculates an expected arrival time at the boarding location.

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22. A reservation changing method used in a reservation changing apparatus for changing a reservation for purchase of a ticket for a transport that provides a transportation service,

the reservation changing apparatus comprising a secure unit,

25 the secure unit including:

a storage unit operable to store first reservation information, the first reservation information indicating the reservation and including a boarding location where the transport is to be boarded

and a departure time of the transport;

an obtaining unit;

a margin judgment unit; and

a changing unit, and

5 the method comprising:

an obtaining step for the obtaining unit to obtain a present location of the mobile terminal apparatus, extract the boarding location from the first reservation information, and obtain an expected arrival time of a user at the boarding location, with use
10 of the obtained present location and the extracted boarding location;

a margin judgment step for the margin judgment unit to judge whether a time margin between the obtained expected arrival time and the departure time included in the first reservation information is sufficient; and

15 a changing step for the changing unit, when the time margin is judged not to be sufficient, to transmit second reservation information to a reservation server apparatus, the second reservation information indicating a reservation for a ticket for another transport that departs later than the departure time, and store the
20 second reservation information in place of the stored first reservation information.

23. A computer program for reservation changing used by a reservation changing apparatus for changing a reservation for purchase of a
25 boarding ticket for a transport that provides a transportation service,

the reservation changing apparatus comprising a secure unit,
the secure unit including:

a storage unit operable to store first reservation information, the first reservation information indicating the reservation and including a boarding location where the transport is to be boarded and a departure time of the transport;

5 an obtaining unit;

 a margin judgment unit; and

 a changing unit, and

 the method comprising:

 an obtaining step for the obtaining unit to obtain a present
10 location of the mobile terminal apparatus, extract the boarding
 location from the first reservation information, and obtain an
 expected arrival time of a user at the boarding location, with use
 of the obtained present location and the extracted boarding location;

 a margin judgment step for the margin judgment unit to judge
15 whether a time margin between the obtained expected arrival time
 and the departure time included in the first reservation information
 is sufficient; and

 a changing step for the changing unit, when the time margin
 is judged not to be sufficient, to transmit second reservation
20 information to a reservation server apparatus, the second reservation
 information indicating a reservation for a ticket for another
 transport that departs later than the departure time, and store the
 second reservation information in place of the stored first
 reservation information.

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24. The computer program of Claim 23, recorded on a computer-readable
recording medium.